

1. A method, comprising:

(A) defining a first experimental space comprising factors of at least two mixtures with at least one common factor;

(B) defining a second experimental space by deleting duplicate factor combinations from said first experimental space; and

(C) conducting a combinatorial high throughput screening (CHTS) experiment on said second experimental space, comprising an iteration of steps of simultaneously reacting a multiplicity of tagged reactants and identifying a multiplicity of tagged products of the reaction and evaluating said identified products after completion of a single or repeated iteration, space to select a best case set of factors from said second experimental space.

15. The method of claim 1, wherein said second experimental space is a ternary space comprising a number of experiments defined by

$$V + \prod_{i=1}^3 n_i \times I_3 + \left[\sum_{i=1}^3 \frac{1}{n_i} \prod_{j=1}^3 n_j \right] \times I_2$$

18. A system for selecting a best case set of experiments of a experimental reaction, comprising;

a processor that (A) defines a first experimental space comprising factors of at least two mixtures with at least one common factor and (B) defines a second experimental space by deleting duplicate factor combinations from said first experimental space and wherein said second experimental space is a ternary space comprising a number of experiments defined by

$$V + \prod_{i=1}^3 n_i \times I_3 + \left[\sum_{i=1}^3 \frac{1}{n_i} \prod_{j=1}^3 n_j \right] \times I_2 \quad ; \text{ and}$$

a reactor and evaluator to select a best case set of factors from said experimental